



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: GENx-1B54/P2 BYPASS RATIO (-): 9.4
 UNIQUE ID NUMBER: 01P17GE204 PRESSURE RATIO π_{co} (-): 35.9
 COMBUSTOR: TAPS
 ENGINE TYPE: TF RATED OUTPUT F_{co} (kN): 255.3

REGULATORY DATA

CHARACTERISTIC VALUES:	LTO_{mass}/F_{co} (mg/kN)	LTO_{num}/F_{co} (particles/kN)	NVPM MASS CONCENTRATION ($\mu\text{g}/\text{m}^3$)
LTO/ F_{co} AND MAX nvPM _{mass}	7.7	7.01E+13	161
AS % OF CAEP/10 LIMIT	-	-	3.7
AS % OF CAEP/11 LIMIT (InP)	2.2	1.7	
AS % OF CAEP/11 LIMIT (NT)	3.6	2.5	

MEASURED DATA

MODE	POWER SETTING (% F_{co})	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES*		NVPM MASS CONCENTRATION PEAK nvPM _{mass} ($\mu\text{g}/\text{m}^3$)
				EI _{mass} (mg/kg)	EI _{num} (particles/kg)	
TAKE-OFF	100	0.7	1.887	1.7	7.94E+10	
CLIMB OUT	85	2.2	1.553	1.6	7.67E+10	
APPROACH	30	4.0	0.518	2.3	3.51E+13	
IDLE	7	26.0	0.178	2.4	3.05E+13	
LTO TOTAL (kg, mg, number of particles)			687	1422	1.29E+16	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/ F_{co} VALUES (mg/kN, particles/kN)				5.6	5.04E+13	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$)				6.9	1.91E+14	125

* Emissions Indices are corrected for thermophoretic loss and fuel hydrogen content

DATA FOR EMISSIONS INVENTORIES (ESTIMATIONS FOR ENGINE EXIT PLANE VALUES)

MODE	POWER SETTING (% F_{co})	CORRECTED EMISSIONS INDICES	
		EI _{mass_SL} (mg/kg)	EI _{num_SL} (particles/kg)
TAKE-OFF	100	2.2	1.10E+11
CLIMB OUT	85	2.2	1.06E+11
APPROACH	30	3.0	1.50E+14
IDLE	7	3.1	1.20E+14

AMBIENT CONDITIONS

	From	To	FUEL	
BAROMETER (kPa)	97.4	98.2	HEAT OF COMBUSTION (MJ/kg)	43.15
TEMPERATURE (K)	289.9	297.9	HYDROGEN CONTENT (%mass)	13.79
HUMIDITY (kg water/kg dry air)	0.0079	0.0127	AROMATICS CONTENT (%vol)	17.7
			NAPHTHALENE CONTENT (%vol)	0.38
			SULPHUR CONTENT (ppm by mass)	12

MANUFACTURER: General Electric Company
 TEST ORGANIZATION: General Electric Company
 TEST LOCATION: PTO, Ohio
 TEST DATES: 05/09/2019-06/09/2019

REMARKS

- GE Aviation Report R2018AE129/Rev. 0
- Engine S/N 598-426
- EImass_SL calculated from average EI_{mass} and KSL_{mass}
- EInum_SL calculated from average EI_{num} and KSL_{num}